

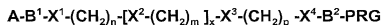
We claim:

1. A reagent for mass spectrometric analysis of proteins which has the general formula:



- where A is an affinity label that selectively binds to a capture reagent, L is a linker group which can be differentially labelled with stable isotopes and PRG is a protein reactive group that selectively reacts with certain protein functional groups.
2. The reagent of claim 1 wherein PRG is a sulfhydryl reactive group or an amine reactive group.
3. The reagent of claim 1 wherein PRG is an enzyme substrate.
4. The reagent of claim 1 wherein the A-L-PRG is soluble in a sample liquid to be analyzed.
5. The reagent of claim 1 wherein the linker is a cleavable linker.

6. The reagent of claim 1 which has the general formula:



where: A is an affinity label;

PRG is a protein reactive group; and

$B^1-X^1-(CH_2)_n-[X^2-(CH_2)_m]_x-X^3-(CH_2)_p-X^4-B^2$  is a linker group wherein:

$X^1$ ,  $X^2$ ,  $X^3$  and  $X^4$ , independently of one another, and  $X^2$  independently of

other  $X^2$ , can be selected from O, S, NH, NR,  $NRR'^+$ , CO, COO, COS, S-S, SO,  $SO_2$ , CO-NR', CS-NR', Si-O, aryl or diaryl groups or  $X^1-X^4$  may be absent;

$B^1$  and  $B^2$ , independently of one another, are optional groups selected from COO, CO, CO-NR', CS-NR',  $(CH_2)_q$ -CONR',  $(CH_2)_q$ -CS-NR', or  $(CH_2)_q$ ;

n, m, p, q and x are whole numbers that can take values from 0 to about 100, where the sum of  $n+xm+p+q$  is less than about 100;

R is an alkyl, alkenyl, alkynyl, alkoxy or an aryl group that is optionally substituted with one or more alkyl, alkenyl, alkynyl, or alkoxy groups; and

R' is a hydrogen, an alkyl, alkenyl, alkynyl, alkoxy or an aryl group that is optionally substituted with one or more alkyl, alkenyl, alkynyl, or alkoxy groups

wherein one or more of the  $CH_2$  groups in the linker can be optionally substituted with alkyl, alkenyl, alkoxy groups, an aryl group that is optionally substituted with one or more alkyl, alkenyl, alkynyl, or alkoxy groups, an acidic group, a basic group or a group carrying a permanent positive or negative charge; wherein one or more single bonds linking non-adjacent  $CH_2$  groups in the linker can be replaced with a double or a triple bond and wherein one or more of the atoms in the linker can be substituted with a stable isotope.

7. The reagent of claim 1 wherein the affinity label is biotin or a modified biotin.
8. The reagent of claim 1 wherein the affinity label is selected from the group consisting of a 1,2-diol, glutathione, maltose, a nitrilotriacetic acid group, or an oligohistidine.
9. The reagent of claim 1 wherein the affinity label is a hapten.



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